The opinion in support of the decision being entered today was not written for publication and is not precedent of the Board.

Paper No. 11

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAVID J. METCALFE and JENG-NAN SHIAU

Appeal No. 1998-2676
Application 08/655,423

ON BRIEF

Before HAIRSTON, JERRY SMITH and GROSS, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 1-3, 7, 15-20 and 22-24[1]. Pending claims 4-6, 8-14 and 21 have been indicated by

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[1] Although appellants' brief does not list claim 19 as being appealed, this appears to be an oversight. Therefore, we will treat the rejection of claim 19 as being appealed along with the other rejected claims.

the examiner to contain allowable subject matter.

The disclosed invention pertains to a method and apparatus for reducing the number of levels in a multi-level grey scale pixel value representing a pixel and diffusing an error generated from reducing the number of levels. The invention adjusts the tonal reproduction curve of a printing system so as to compensate for spot overlap produced by a printing device.

Representative claim 1 is reproduced as follows:

1. A method of reducing a number of grey levels of a multi-level grey scale pixel value representing a pixel and diffusing an error generated from reducing the number of grey levels, comprising the steps of:

(a) receiving a multi-level grey scale pixel value, the multi-level grey scale pixel value having a first spatial resolution;

(b) generating a screened multi-level grey scale pixel value from the received multi-level grey scale pixel value;

(c) reducing the number of grey levels in the screened multi-level grey scale pixel value;

(d) generating an error value as a result of the reduction process in step (c);

(e) modifying the generated error value based on an effective spot area value to generate a modified error value, the effective spot area value being dependent on the multi-level grey scale pixel value; and

(f) diffusing, based on a set of pre-determined weighting coefficients, the modified error value to multi-level grey scale pixel values of adjacent pixels.

The examiner relies on the following reference:

Lin et al. (Lin) 5,553,171 Sep. 03, 1996 (filed July 26, 1995)

Claims 1-3, 7, 15-17 and 19 stand rejected under 35 U.S.C. § 102(e) as being anticipated by the disclosure of Lin. Claims 18, 20 and 22-24 stand rejected under 35 U.S.C. § 103 as being unpatentable over the teachings of Lin taken alone.

Rather than repeat the arguments of appellants or the examiner, we make reference to the brief and the answer for the respective details thereof.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the examiner and the evidence of anticipation and obviousness relied upon by the examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellants' arguments set forth in the brief along with the examiner's rationale in support of the

rejections and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that the disclosure of Lin does not support either of the examiner's rejections of the appealed claims. Accordingly, we reverse.

We consider first the rejection of claims 1-3, 7, 15-17 and 19 as being anticipated by the disclosure of Lin. Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.); cert. dismissed, 468 U.S. 1228 (1984); W.L. Gore and Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

The examiner indicates how he reads independent claims 1 and 15 on the disclosure of Lin [answer, pages 4-6]. With respect to each of claims 1 and 15, appellants argue that Lin

fails to anticipate the step of modifying the generated error value based on an effective spot area value. Appellants argue that in Lin the modification is based on a conventional set of weighting coefficients and not on an effective spot area value which is grey level dependent as claimed [brief, pages 5-7]. The examiner responds that the effective spot area value in Lin is the actual area or region of data which is being subjected to the processing by circuits 120, 130, 160 and 150. In other words, the examiner finds that the claimed effective spot area data is obtained from the reconstruction circuit 100 of Lin [answer, pages 13-16].

We agree with appellants' position as set forth in the brief. We do not understand the examiner's reasoning that the output of reconstruction circuit 100 in Lin is an effective spot area value and that this value is used to modify the error value generated as a result of the reduction process. Claims 1 and 15 recite that the error value which is generated as a result of the reduction step or the thresholding step must be further modified based on an effective spot area value. We fail to see how the output of reconstruction circuit 100 in Lin constitutes such an effective spot area

value or how this value provides the claimed error modification. The application disclosure describes the effective spot area value as a function of the characteristics of the printer. Specifically, the spot overlap of a given printer is empirically determined, and the input dependent effective spot area as recited in the claims is a function of these empirically determined values. The examiner's finding of anticipation is based entirely on a speculative interpretation of Lin. We can find nothing in Lin which suggests that there is any teaching of the use of effective spot area values as that term is used in the specification and the claims. Therefore, we do not sustain the anticipation rejection of any of claims 1-3, 7, 15-17 and 19 based on the disclosure of Lin.

We now consider the rejection of claims 18, 20 and 22-24 under 35 U.S.C. § 103 as unpatentable over the teachings of Lin. In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual

determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467
(1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the

relative persuasiveness of the arguments. See Id.; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976). Only those arguments actually made by appellants have been considered in this decision. Arguments which appellants could have made but chose not to make in the brief have not been considered [see 37 CFR § 1.192(a)].

Independent claims 18 and 22 have a similar recitation with respect to modifying an error value based on an effective spot area value that we considered above with respect to claims 1 and 15. The examiner's rejection under 35 U.S.C. § 103 relies on the same deficient teachings of Lin that we considered above. Therefore, the examiner's analysis does not establish a prima facie case of obviousness for the same reasons discussed above. Accordingly, we do not sustain the examiner's rejection of claims 18, 20 and 22-24 based on the teachings of Lin taken alone.

In summary, we have not sustained either of the examiner's rejections of the appealed claims. Therefore, the decision of the examiner rejecting claims 1-3, 7, 15-20 and 22-24 is reversed.

REVERSED

KENNETH W. HAIRSTON	)	
Administrative Patent Judge	)	
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	)	
	)	
JERRY SMITH	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS AND
	)	INTERFERENCES
	)	
	)	
ANITA PELLMAN GROSS	)	
Administrative Patent Judge	)	

JS/ki

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